Dr. Stein's finds have amply confirmed the statements of the Chinese official records, especially with regard to the period of the isolation of the "Four Garrisons" of Turkestan after the Tibetans had driven a wedge northwards into the dominions of the T'ang, in the eighth century A.D. To this period belong the ruins of Dandan-Uiliq, while those of Niya, which show the most marked classical characteristics, are five hundred years older. It is at Niya that we find a document sealed with a Chinese and a Greek seal side by side!

The Tibetan evidence contained in graffiti (which Dr. Stein for some reason insists on calling "sgraffiti": "sgraffito-work" is something quite different) at Dandan-Uiliq and Endere is curious. We have apparent references to defeats of the Chinese: "At Pyagpag in the province of Glom-lom this army fought, and a tiger's meal was obtained (*i.e.* many were killed)"; followed by the savage remark, "Now eat until you are fat!" apparently an incitement to go and kill more Chinese. These Tibetan graffiti have been translated by Dr. Barnett, of the British Museum, and Dr. Francke, of Leh: from the transcripts of them and of the Buddhist sutras in Tibetan, also found by Dr. Stein, the curious reader can gain an idea of the sounds of the extraordinarily hideous Tibetan language, which would seem to have served as the model for Swift's Glumdalclitch, Brobdingnag, the Struldbrugs, and the rest of the names in "Gulliver's Travels," not excepting "Houynhnhnm."

The Chinese graffiti are translated by the great French Sinologist, Dr. Chavannes; and Prof. E. J. Rapson, of Cambridge, has begun the translation of the Kharoshthi letters of the Indian maharajas who ruled Khotan in the third century B.C., and of their officials and dependants. Chinese rule seems to have been maintained contemporaneously with that of the maharajas; but what powers were specially reserved to the latter we cannot quite see from this correspondence. Dr. Stein's new discovery (1907), that the Indian kingdom stretched away east to beyond Cherchen and Charkhalik to the Lop-nor, is of great historical importance.

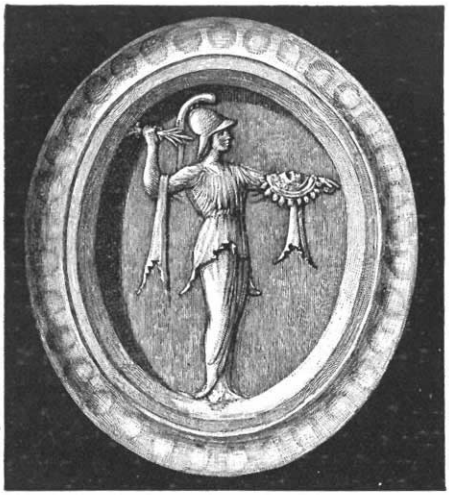

FIG. 2.—Intaglio of a Greek Goddess. From "Ancient Khotan."

For the details of Dr. Stein's exhaustive description of his discoveries we must refer the reader to the book. The congratulations of all archæologists to all concerned in its making go without saying. And not least congratulatory should be modern Chinese and Japanese literati, to whom the Chinese documents and antiquities of the Former Han and the Great T'ang dynasties should prove of the greatest interest.

H. R. HALL.

INTERNATIONAL METEOROLOGICAL COMMITTEE.

A MEETING of the International Meteorological Committee was held at Paris on September 10 and following days.

The committee consists of seventeen members, appointed at the conference at Innsbruck in 1905. Ten members were present, including the director of the Japanese service. Two places were vacant by death. The principal subjects discussed were the scheme of organisation of international meetings for meteorological purposes; marine charts and weather signals; a number of items of the international daily weather service, including reports by wireless telegraphy; and various propositions concerning the meteorology of the globe, in which were included one on the necessity for observing stations in the regions of centres of action of the atmosphere, another on the necessity for new charts of isotherms for the globe, and a third on the desirability of daily observations from selected stations, in order to trace the course of meteorological changes over the globe.

A number of special commissions were appointed to report upon, or carry out, the various proposals. M. Mascart, president of the committee, was unfortunately prevented by illness from attending the meetings with the exception of one held at his house for the discussion of the question of international organisation. At the close of the session he resigned the office of president, and Dr. Shaw, director of the British Meteorological Office, was elected president. M. Angot, M. Mascart's successor at the Bureau Central, takes his place also as a member of the committee. Dr. Hellmann, director of the Prussian Meteorological Institute, was elected secretary, in succession to Prof. Hildebrandsson, who retires upon his withdrawal from the post of director of the Royal Meteorological Observatory at Upsala. Dr. Hamberg, director of the Swedish Meteorological Office, was elected to succeed Prof. Hildebrandsson as a member of the committee. The other vacant places were filled by the appointment of Dr. Maurer, director of the Swiss office, and Mr. Stupart, director of the Canadian office.

NOTES.

WE notice with regret the announcement made in a Reuter telegram from Paris that M. Loewy, director of the Paris Observatory, and a member of the Academy of Sciences, died there on Tuesday, October 15.

AT 1.17 a.m. on October 11 the Cunard liner *Lusitania* arrived at Sandy Hook, having crossed the Atlantic in 4 days 19 hours 52 minutes. The total distance travelled was 2780 nautical miles, and the average speed was 24·002 knots. The highest day's run was 617 nautical miles.

REUTER'S correspondent at Mombasa reports that Dr. Koch, who has been examining the causes of sleeping sickness, left for Germany on October 15. His investigation camps in Uganda have been taken over by the colonial authorities. It is understood that Dr. Koch's investigations have not led to any fresh discoveries.

THE Peking correspondent of the *Times* reports that an Imperial Edict issued on October 9 orders the Board of Revenue and Commerce forthwith to introduce a uniform system of weights and measures throughout the Chinese Empire, the standards to be fixed within six months.

A REMARKABLE long non-stop railway run was achieved by the Great Western Railway on September 16. A special excursion train, carrying only third-class passengers, the total load weighing approximately 148 tons, was run from Paddington to Fishguard, a distance of 263½ miles, without a stop, at an average speed of 53 miles an hour.

ON October 12 the Clifton (Bristol) Scientific Club celebrated its twenty-first anniversary by entertaining Sir William Ramsay and other past members, when Sir William, who was one of the founders of the club, delivered an address on the recent history of chemical science and on the nature of matter. On the previous evening he visited Clifton College, where he gave an account of the experiments by which argon and other gases of the atmosphere were discovered.

WE learn from the *Pioneer Mail* that a large meeting was held at Rangoon on September 19 to consider the establishment of a Pasteur Institute in Burma. It was resolved that the institute should be established at Maymyo. A committee was formed with powers to undertake measures preliminary to the formation of the institute. The subscriptions already amount to 80,000 rupees, which secures the success of the movement. Other subscriptions have been promised, which will be sufficient to enable the institute to start on a wide basis.

THE announcement that bison are about to be taken from the Zoological Park in New York to Kansas reminds one of the carrying of coal to Newcastle. In the great plains of the Middle West, however, the encroachment of population has practically made these animals extinct. The zoological collections in the east are now to be drawn upon to re-establish, in the Wichita reservation, herds of sufficient size to ensure their permanency.

AN exhibition has just been held in Boston, U.S.A., to illustrate the precautions that should be taken against tuberculosis. It included a representation, side by side, of two sleeping-rooms, with arrangements favourable and unfavourable respectively to the growth of the disease. There were also exhibits of tents for open-air treatment. A lecture on hygiene was given during the exhibition.

AN exhibition promoted by Lady Aberdeen, as president of the Women's National Health Association of Ireland, with the object of educating the people on the great danger of tuberculosis, was opened at Dublin by the Lord Lieutenant on October 12. The exhibition is intended to be an object-lesson to teach people certain facts contained in Blue-books and the Registrar-General's reports. Its primary object is to reach the women of the country, and to bring these facts home to them as guardians of the home. In opening the exhibition, the Lord Lieutenant read the following message from the King:—"I am commanded by the King to express his good wishes for the success of the Tuberculosis Exhibition, the first of the kind ever held in Great Britain and Ireland, on the occasion of its being opened by you to-day. His Majesty is greatly interested in the problem of checking the progress of this disease, and he trusts that the exhibition may be the means of attracting the attention of the public to the terrible ravages caused by this scourge and to the efforts which are now being made to arrest its progress.—KNOLLYS." After the exhibition has closed at Dublin it will be taken to various parts of Ireland, where lectures will be delivered upon it.

IN connection with the indication by the London County Council of houses in London which have been the residences of distinguished individuals, a memorial tablet was, on October 7, erected on 88 Mile End Road, E., where Captain Cook, the circumnavigator, resided at one time. It is probable that his removal to this house took place in 1764, and his wife continued to reside there for some time after his death in Hawaii in 1779. The house does not appear to have been re-built since Captain Cook's tenancy, but it has been converted from a private dwelling-house into business premises by the erection of a shop on the forecourt. The tablet is of encaustic ware, terra-cotta in colour, and bears the following inscription:—"Capt. Cook, 1728–1779, Circumnavigator, Lived Here."

REFERENCE has previously been made in these columns to the progress effected by the Congo authorities in the task of domesticating the African elephant. A recent visitor to the State establishment at Api writes as follows:—"Owing to an unfavourable season no attempt has been made to increase the number of elephants under training. The number in the colony at the present time is twenty-five, of which nineteen are employed in different kinds of work. During the four months of the wet season the elephants are not merely not worked, but are even allowed to rejoin those in a wild state—that is to say, they are turned out into the forest, but they seem to keep apart. They, however, attract some of the wild elephants to the vicinity of the establishment, but these are generally too old and intractable to provide useful recruits. On resuming the regular routine they manifest no indisposition to work, and submit themselves freely to the discipline of the establishment. The African elephant is of short stature, the young elephants at Api averaging from 4 feet 4 inches to 5 feet 7 inches at the shoulder."

THE report of the Departmental Committee appointed to inquire and report as to the nature and extent of the benefit accruing to British arts and industries from the participation of this country in great international exhibitions, which has just been issued as a parliamentary paper (Cd. 3772, price 7d.), is a document of great interest. The committee found that the evidence it received went to show that international exhibitions are of little use to the textile and other great staple industries of the country. The committee is, however, in favour of the continued participation of this country in all really important exhibitions, owing to the indirect advantages resulting. One aspect of exhibitions to which it is considered that considerable importance should be attached is the effect which they have in encouraging national emulation and in stimulating individual exhibitors to improve their productions. Interesting examples of the effects which particular exhibitions have had on the development of different industries will be found in the evidence of Sir William Preece, K.C.B., Mr. Bennett Brough, and other witnesses. Sir William Preece attributes to the Paris Exhibition of 1881 many of the most important developments of the electrical industry. The exhibition at Paris of certain high-speed tool steels by an American firm is said by Mr. Bennett Brough to have contributed in a large degree to the development of what has become a British industry of great magnitude; and an exhibit by the Courrières Colliery Company, at the mines of which the death-rate from falls of roof was abnormally low, has since led to considerable improvement in the methods of timbering employed and a consequent decrease in the death-rate. The report concludes with important recommendations for securing in future continuity of organisation from exhibition to exhibition, and more effective representation of this country at any exhibition in which the Government may decide to take part.

In the September issue of the *Annals and Magazine of Natural History*, Mr. G. E. Mason describes the remains of a supposed new fruit-bat from Round Island, near Mauritius. The remains, which occur in a guano-deposit, appear to be very recent, and in the October issue of the same journal they are referred by Dr. K. Andersen to an existing species.

Lydekker

Articles on spermatogenesis in the water-beetle (*Dytiscus marginalis*), with remarks on the nucleolus, by Mr. W. D. Henderson, Carnegie research fellow at Aberdeen, and on the embryonic development of *Taenia serrata*, by C. von Janicki, of Basle, appear in *Zeitschrift für wissenschaftliche Zoologie*, vol. lxxxvii., part iv.

Do

Nos. 1558, 1559, and 1561 of the Proceedings of the U.S. National Museum are devoted to new echinoderms from the North Pacific, Mr. C. L. Edwards describing holothurians in the first of these issues, while free crinoids are discussed by Mr. H. H. Clark in the second and third. Attention is directed to the brilliant and varied colouring of the feather-stars of the multicolour group of Antedon, which exceeds that of all other crinoids. For classificatory purposes this colouring is, however, useless.

Do

The colouring of the interior of the mouths of nestling perching-birds offers, according to Mr. W. P. Pycraft in *British Birds*, No. 5, an almost unknown field of investigation. It is suggested that the bright-coloured membranous margins of the gape are intended as a guide to the parents in feeding their offspring. In addition to this, the interior of the mouth in most nestlings is bright yellow, occasionally marked with black (hedge-sparrow) or white (bearded titmouse) spots on the tongue and palate, and it seems that this bright colouring attains its highest development in nestlings reared in deep shade. If this be confirmed, it seems obviously connected with the feeding process.

Do

The greater part of vol. viii., No. 1 of the Journal of the Marine Biological Association is taken up with descriptions of various organisms collected in August, 1906, by the *Huxley* during a cruise on the north side of the Bay of Biscay. Among these, the most interesting is a second specimen of *Corallium maderense*, this genus of alcyonarians being previously unknown from the area in question. The axis, or "coral," is white, hard, and semi-translucent; and, although not likely to command a high price, in the opinion of Prof. Hickson, this coral might prove, if found in sufficient quantities, to have a marketable value.

Do

In an article on the harm caused to the vision of school children by their studies, published in the *Popular Science Monthly* for July, Prof. W. D. Scott remarks that "the human eye which had been evolved for distant vision is being forced to perform a new part, one for which it had not been evolved, and for which it is poorly developed. The difficulty is being daily augmented. The invention of printing presses has been followed by an increasing number of books, magazines, and daily papers. . . . All things seem to be conspiring to make us use our eyes more and more for the very thing for which they are the most poorly adapted. It requires no prophet to foresee that such perversion in the use of an organ will surely result in a great sacrifice of energy, if not of health and of general efficiency." Certain mitigations of the evil are suggested in the case of young school children.

Do

To the October number of the *Century Magazine* Prof. H. F. Osborn contributes an illustrated article on his experiences in the Fayum district of Egypt while in search of fossil vertebrate remains, with remarks on the nature and origin of the fauna and its bearing on the geographical distribution of mammals. Among the illustrations, special reference may be made to Mr. C. B. Knight's restorations of Arsinoitherium, Hyænodon, and Zeuglodon. In Eocene times the Fayum, in the author's opinion, was a savanna country, partly open, partly covered with scrub, and partly with forest, the temperature being much the same as at the present day. That Africa (when much less extended to the north than at present) was the home of the ancestral proboscideans, sea-cows, hyraxes, and probably hyænodonts, Prof. Osborn is fully convinced; but the absence in the Eocene deposits of remains of ancestral hippopotamuses, ruminants, horses, and rhinoceroses leads to the inference that "none of these quadrupeds had as yet reached Africa; that they were evolving elsewhere, either in Europe, Asia, or North America, and preparing for the great interchange of life which would occur when Africa should again be connected with the other continents." In referring on p. 824 to the *emus* of New Zealand, the author doubtless intended to write *moas*.

Do

In vol. xx., part i., of the Proceedings of the Royal Society of Victoria, Prof. R. J. A. Berry reproduces a photograph of an aged half-caste Tasmanian woman now living on Kangaroo Island, South Australia. She is the daughter of a pure-bred Tasmanian woman by a European husband, and was born on the island about seventy-five years ago. In colour, as well as in her wide nostrils and mouth, weak chin, and dark eyes, she retains strong evidence of her Tasmanian ancestry, but her hair, although distinctly woolly, has departed somewhat from the aboriginal type. The latter is, however, better displayed in one of her daughters, who is, of course, a quarter-caste. The author believes "Mrs. S." to be the oldest surviving half-caste Tasmanian. Prof. Berry accepts the view that the Tasmanians were a branch of the Papuans, and that they reached Tasmania at an early period across Australia, when the continent had a direct land connection with Tasmania. Various cases have been known along the coasts of southern Australia of hybrids between Australian and Tasmanian aborigines, doubtless due to Tasmanians having been carried across Bass Strait by the sealers. The same number of the Proceedings contains a paper by Messrs. Chapman and Pritchard on fossil fish remains from the Australian Tertiaries; it describes seven new species, which are referred to genera which range in time from the Jurassic to the present. There is also the sixth of Prof. Ewart's contributions to the flora of Australia, and a paper by the same author on the movement of the soluble constituents in fine alluvial soils.

Do

J W Gregory

The theoretical articles in the fourth part of vol. v. of *Biometrika*, issued in September, include a note by Mr. Francis Galton on "grades and deviates," with a table giving the deviations in the normal curve corresponding to assigned percentiles; this table is due to Mr. W. F. Sheppard, who also contributes a memoir on the calculation of moments. Mr. A. P di Cesnola gives an account of an investigation as to the action of natural selection in *Helix arbustorum*, by the method of the late Prof. Weldon, shells being ground so as to expose a longitudinal section of the spiral on which measurements can be made, and the frequency distributions compared for the earlier whorls in young and adults. The results show that there is markedly less

Yule

variation in the adults, and consequently some periodic selection. The records of Prof. Weldon for inheritance in mice are reduced and discussed, so far as regards sex-ratio and size of litter; there is little, if any, inheritance in either case, but the figures exhibit some peculiarities. The remaining articles include investigations by Prof. F. Y. Edgeworth on the average time of absence of wasps and bees from the nest, by Miss Wright, Miss Lee, and Prof. Karl Pearson on the wing dimensions of wasps (*Vespa vulgaris*), and by Dr. J. Brownlee on means of estimating the severity of attack in cases of acute disease. There are a few miscellanea, and a bibliography of literature on biometry and Mendelism relating chiefly to issues of 1906.

On the subject of apogamy in the fern genus Nephrodium, Mr. S. Yamanouchi communicates a preliminary notice of his cytological investigations to the *Botanical Gazette* (August). In the normal gametophyte of *Nephrodium molle* sixty-four or sixty-six chromosomes were counted, and the double number in the sporophyte. In the apogamous developments, the sporophyte was followed from an initial cell, the nucleus of which contained the smaller number of chromosomes, and the same number was found throughout all the stages of the sporophyte.

The first two numbers for the current year of the *Journal Botanique* of the Imperial Society of Naturalists in St. Petersburg contain two papers by Mr. A. Elenkin on lichens. In the earlier he describes three new lichens for the genera Evernia, Aspicilia, and Lecania, all collected in Russia; in the later he discusses the comparative amount of growth in erect and horizontally growing species of close affinity. The description of a new species of Eremurus from China derives its chief interest from the fact that, as the author, Mr. O. A. Fedtschenko states, this is the first record of that genus from China, and a considerable extension of its distribution south-eastwards beyond the previous limit in or near Nepal.

Mr. C. E. C. Fischer contributes to the *Indian Forester* (August) a list of host plants of various species of Loranthus and Viscum observed in the North Coimbatore Division of Madras. It is stated that these parasites are most frequent in dry, deciduous forests at elevations between 3500 feet and 4500 feet, where practically every tree is attacked. The occurrence of one parasite growing on another parasite is recorded. The method of exploiting the trees of *Terminalia Chebula* for their fruits, the myrobalams of commerce, is described by Mr. J. E. C. Turner. The sound fruits become ridged when they are dried in the sun, and the pericarp becomes exceedingly hard; others do not wrinkle, owing to the decomposition attributed to a fungus of part of the mesocarp into a black powder that has a small value for making ink. For sowing, the damaged fruits are preferable, since germination is not hindered by a hard pericarp.

Within recent years an algal disease, known as the "red rust" of tea, caused by *Cephaleuros virescens*, one of the Chroolepidæ, has become a serious pest in the tea districts in India. Dr. H. H. Mann and Mr. C. M. Hutchinson, scientific officers to the Indian Tea Association, after following the course of the disease for some years, have published an account of their observations in the botanical series of the Memoirs of the Department of Agriculture in India (vol. i., No. 6). The growth on the leaf, being usually confined to the surface, would be unimportant, except for the fact that the sporangia there formed provide the means for the spread of the disease. This is effected either by transference of the sporangia as a whole or of the zoospores. The real danger is due to the penetration of the young stems of the tea plant by the alga, when, if the alga prevails, the leaves turn white and the stems are killed.

It is well known that tide curves show that, in addition to waves of very short duration due to wind, and those caused by the regular flow and ebb of the tide, pulsations sometimes called "marine seiches" or "vibrations of the sea" occur with periods of fifteen to twenty minutes, but differing considerably in various localities (see Nature, January 12 and April 20, 1899). In the *Annuario* of the R. Nautical Institute of Catania, Sicily (vol. i., 1907), Prof. Giovanni Platania contributes an interesting paper on the subject, with the results of some fresh researches made by himself in the Gulf of Catania. Opinions differ as to the origin of these vibrations, which are observed under different meteorological conditions; the author thinks that the principal cause is variations of atmospheric pressure. The microbarograph recently devised by Dr. Shaw and Mr. Dines for recording the minor and sudden fluctuations of the atmosphere will probably help further to elucidate the phenomenon.

The current issue of the *Central* (vol. iv., No. 12) contains an interesting account of research work carried out recently in the electrical department of the Central Technical College. There is also a well-illustrated description of the cyanide process for the extraction of gold and silver from their ores, written by Mr. Reginald Krall.

The British South Africa Company has issued a copiously illustrated monograph on Rhodesia, covering 120 pages. It contains much information for travellers generally, and for sportsmen in particular. The illustrations have been admirably reproduced, and the five coloured maps are excellent. The volume should prove of special use to teachers as a class-book.

The mode of formation of many placer deposits is not clearly understood, and the source of the gold has not been definitely determined. In view of this uncertainty, a recent paper by Mr. J. B. Tyrrell in *Economic Geology* (vol. ii., No. 4) is of special interest. He describes the conditions that prevail in the Klondike district of Canada, a country of exceedingly rich gold-bearing placers, where the origin and processes of deposition and concentration of the gold into its present position are easily recognised. His investigations show that the district owes its phenomenally rich placers, not to the wearing down of highly mineralised gold-bearing veins, but rather to the favourable conditions of long-continued and uninterrupted concentration from a great mass of rock that contained only very minute quantities of gold.

Three valuable monographs have been issued by the Corps of Mining Engineers of Peru. In *Boletin* No. 51 Mr. F. M. Santolalla describes the mineral resources of the province of Huamachuco. The mineral deposits may be divided into three groups, the veins in eruptive rocks, such as the gold veins of the Toro, the lead-antimony-silver ores of Cerro Negro, and the magnetic iron ores of San Pascual and Potosi de Serpaquino. The coal deposits of the province have been known from time immemorial. In short, the mineral resources might be worked with great advantage if better means of communication were available. In *Boletin* No. 52 Mr. H. C. Hurd investigates two schemes for diverting the waters of the Rio de

Lambayeque. Lastly, in *Boletin* No. 54 Mr. G. Klinge gives the mineral statistics of Peru for the year 1906. The production included 79,969 tons of coal, 70,832 tons of petroleum, 20,226 tons of salt, 2598 tons of borates, 1830 tons of sulphur, 230 tons of silver, 13,474 tons of copper, 2568 tons of lead, 2304 kilograms of mercury, and 1247 kilograms of gold.

M. A. Pelletan, in the October number of the *Journal de Physique*, expresses his regret that in France there is so much difficulty in finding persons capable of determining the elements of an optical instrument by any of the modern methods. It seems singular that in a country through which a knowledge of mathematics is more widely spread than elsewhere, that knowledge should find fewer practical applications than it does in almost any other country. M. Pelletan suggests the formation of a Government office to which engineers whose knowledge or leisure would not allow them to cope with mathematical difficulties might bring their problems for solution. In the meantime, he gives a clear *résumé* of the general methods of treating geometrical optics which have been developed from Hamilton's characteristic function. These methods are not so well known in this country as they deserve to be, and we have not yet risen to the point of regretting our want of knowledge of them.

The measurement of the angle between the optical axes of a biaxial crystal has always played an important part in the identification of the crystal, and several methods of making the measurement are in common use. There has, however, been little comparative or critical study of the accuracy of the different methods under different conditions. A considerable portion of the *American Journal of Science* for October is devoted to such a study from the pen of Mr. F. E. Wright, of the Carnegie Institution. During the course of his experimental work, Mr. Wright has constructed a double-screw micrometer ocular with the screws at right angles to each other which he uses to determine the position of any point on the interference figure produced when a thin plate of the crystal is examined in plane polarised convergent light. By this means he is able to obtain more accurate results than were possible with the ordinary micrometer in Becke's method. He advocates the use of the stereographic projection in preference to any other.

An interesting account of the processes recently devised for liquefying air on an industrial scale, and for extracting oxygen directly from the liquefied product, is contained in an article by Prof. E. Mathias in the *Revue générale des Sciences* (No. 17, p. 697). Particular attention is directed to the method of liquefaction developed by Claude, in which the principle of expansion with the performance of external work has been adopted with remarkable success. The process patented by Thrupp in 1898, and that described by Linde in 1901, are also described. The problem of separating air into its constituents oxygen and nitrogen, which has formed during the past few years so prominent a goal for the endeavours of engineers of all countries, is dealt with at somewhat greater length, the many schemes suggested being considered in detail. Such success has attended the efforts made to separate the gases of the air industrially by liquefaction that the expenditure involved in preparing 1 kilo. of pure nitrogen on the large scale has fallen below a penny. The article is illustrated by nineteen drawings showing the principle of the various types of plant in use.

A seventh and enlarged edition of the translation by H.R.H. Princess Christian of Prof. Friedrich Esmarch's "First Aid to the Injured," with additional illustrations, has been published by Messrs. Smith, Elder and Co., at 2*s.* net.

Nearly half of the thirteenth edition of Mr. W. H. Harling's illustrated catalogue of mathematical drawing instruments is new matter. Every requirement of the architect, draughtsman, and student appears to be anticipated. The needs of teachers of practical mathematics have been borne in mind, and considerable space is given in the additional pages to particulars concerning instruments for measuring with precision lengths, angles, and other dimensions.

Mr. H. K. Lewis has published a third edition of "Hygiene and Public Health," by Dr. Louis C. Parkes and Prof. Henry R. Kenwood. The present work grew out of Dr. Parkes's "Hygiene, or Public Health," which appeared in 1890, and was reviewed in Nature of January 30, 1890 (vol. xli., p. 290). A certain amount of new matter has been introduced into the present edition, but some parts of the previous issue have been compressed and abbreviated. The size of the page, too, has been slightly enlarged.

A fifth edition of the late Prof. P. G. Tait's well-known "Properties of Matter" has been published by Messrs. A. and C. Black at 7*s.* 6*d.* The work appeared first in April, 1885, and was reviewed at length in our issue of August 6, 1885 (vol. xxxii., p. 314), by Lord Rayleigh. The present edition has been edited by Prof. W. Peddie, of the University College, Dundee. The recent advance of physical science has necessitated some additions, but these have in every case been placed within brackets and initialed by the editor, so that the original plan of the book has been preserved.

OUR ASTRONOMICAL COLUMN.

A New Comet.—A telegram from the Kiel Centralstelle announces the discovery of a new comet by Mr. Mellish on October 13. Its position at 16h. 0m. (Madison-Wisconsin M.T.) on that date was R.A.=8h. 31m., dec.=9° 24′ S., and the comet was moving slowly in a north-westerly direction.

This position lies between one-quarter and one-third the distance from [illegible] to C Hydræ, and the comet is apparently travelling towards Canis Minor. At present it rises a little to the south of east at about 2 a.m., and crosses the meridian at 7 a.m.

Sun-spot Spectra.—At the June meeting of the Royal Astronomical Society, Prof. Fowler announced that he had found a terrestrial origin for the numerous short, hazy lines, known as "band" lines, in sun-spot spectra which have hitherto remained unorigined. These lines, it now appears, are part of an extensive "fluting" spectrum ascribed by Liveing and Dewar, in 1881, to a compound of magnesium and hydrogen (Proc. Roy. Soc., vol. xxxii., p. 190), and investigated by Sir Norman Lockyer.

The brightest fluting begins near λ 5211, and fades off towards the violet; a second includes the well-known hazy spot lines at λλ 5163·2, 5160·1, 5156·8, &c., whilst others begin at λ 5620 and on the violet side of Hβ. A comparison of the laboratory wave-lengths obtained by Prof. Fowler with those observed in the sun-spot spectrum places the identification beyond doubt, and it is estimated that probably several hundreds of the sun-spot "band" lines will be found to agree, in position, with those occurring in the laboratory spectrum (Monthly Notices R.A.S., vol. lxvii., p. 530, June).